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11 Jul 97

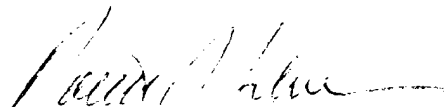
From: Director, Office of Naval Research, Seattle Regional Office, 1107 NE 45th St., Suite 350, Seattle, WA 98105

To: Defense Technical Center, Attn: P. Mawby, 8725 John J. Kingman Rd., Suite 0944, Ft. Belvoir, VA 22060-6218

Subj: RETURNED GRANTEE/CONTRACTOR TECHNICAL REPORTS

1. This confirms our conversations of 27 Feb 97 and 11 Jul 97. Enclosed are a number of technical reports which were returned to our agency for lack of clear distribution availability statement. This confirms that all reports are unclassified and are "APPROVED FOR PUBLIC RELEASE" with no restrictions.

2. Please contact me if you require additional information. My e-mail is silverr@onr.navy.mil and my phone is (206) 625-3196.


ROBERT J. SILVERMAN

**To: Regional Director
Team Leader
ACO**

This technical report was sent to me by DTIC because it does not include the DD-1498 form with the proper disclosure/distribution statement.

Please obtain this form with proper instructions and return it and the technical report directly to DTIC.

Also implement procedures with the contractor to correct this problem.

Thank You,

A handwritten signature in black ink that reads "Jim Carbonara". The signature is stylized with a large, sweeping "J" and a cursive "Carbonara".

**Jim Carbonara,
Director, Field Operations**

REPORT DOCUMENTATION PAGEForm Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)**2. REPORT DATE**

12/15/95

3. REPORT TYPE AND DATES COVERED

Semi-Annual 6/30/95 - 12/30/95

4. TITLE AND SUBTITLEThe Mauthner System Model for Directional Hearing
in Fish**5. FUNDING NUMBERS**

N00014-94-1-0380

6. AUTHOR(S)

Robert C. Eaton, Ph.D

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)University of Colorado at Boulder
Dept. of Environmental Population
and Organismic Biology
Campus Box 334
Boulder, CO 80309-0334**8. PERFORMING ORGANIZATION
REPORT NUMBER**

153-5712

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

NONE

**10. SPONSORING/MONITORING
AGENCY REPORT NUMBER****11. SUPPLEMENTARY NOTES****12a. DISTRIBUTION / AVAILABILITY STATEMENT****12b. DISTRIBUTION CODE****13. ABSTRACT (Maximum 200 words)**

See Attached

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14. SUBJECT TERMS**15. NUMBER OF PAGES****16. PRICE CODE****17. SECURITY CLASSIFICATION
OF REPORT****18. SECURITY CLASSIFICATION
OF THIS PAGE****19. SECURITY CLASSIFICATION
OF ABSTRACT****20. LIMITATION OF ABSTRACT**

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The Report Documentation Page (RDP) is used in announcing and cataloging reports. It is important that this information be consistent with the rest of the report, particularly the cover and title page. Instructions for filling in each block of the form follow. It is important to *stay within the lines* to meet optical scanning requirements.

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| G - Grant | TA - Task |
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MEMORANDUM

To: Dr. Harold Hawkins (phone: 703-696-4323)
ONR, Code 3421 (1142 CN)
800 N. Quincy Street
Arlington, VA 22717

RE: ONR Award N00014-94-19-0380

Subject: Progress report

PI: Robert C. Eaton, Ph.D.

Address: Center for Neuroscience & Department of Biology
EPO Box 334, University of Colorado at Boulder, CO 80309, PHONE: 303-492-6536
BITNET:MAUTHNER@SPOT.COLORADO.EDU FAX: 303-492-8699

Title: The Mauthner System Model for Directional Hearing in Fish

Description: This is a study of the problem of sound localization in fish involving an analysis of the neural mechanisms of sound avoidance responses triggered by the Mauthner system.

Progress: The following progress has been made in achieving the goals of this project.

This is an analysis of the neural mechanisms of sound avoidance responses triggered by the Mauthner system in fish. The following progress has been made. 1) Behavioral experiments show that goldfish turn away from sound sources predicted by our XNOR version of the phase model: the fish avoids P+/A+ and P-/A- (for impulse sounds in the near field, where P+ = positive pressure, A+ = particle acceleration toward the side of the activated Mauthner cell). 2) The Mauthner cell is broadly tuned to P+ and P- in the range of 0.1-2KHz, and equally is sensitive to A+ and A- at 0.1 KHz at about 0.1 m/sec². We have as yet seen no preferential Mauthner responsiveness to *combinations* of P and A; that is P+/A+, an ON combination, is not faster or larger than P+/A-, an OFF combination. If so, then the PHP cells must be performing a major part of the neural analysis. 3) The most recent version of our neurocomputational model predicts known Mauthner network dynamics when the PHP cells serve as OR gates; as previously shown, the PHP cells modulate Mauthner threshold to particular stimulus amplitudes and our model shows they can simultaneously allow Mauthner to discriminate left from right sound sources.

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